OSIsoft®

SUMMARY

SunCoke Energy®

Industry

Mining, Metals, Metallurgy, Coke, Steel, Power Generation, Co-Generation

Business Value

- Business Intelligence
- Predictive Maintenance
- Data Validation & Auditing
- Performance Monitoring
- Continuous Improvement
- OT-IT Integration

PI System™ Components

- PI Server™
  - Data Archive
  - Asset Framework
  - Notifications
  - Event Frames
- PI Manual Logger™
- PI Vision™[1]
- PI ProcessBook™

Partners

Rovisys
Process Innovations

Achieving Enterprise-Wide Operational Intelligence

SunCoke Energy operates six sites in the US and Brazil for the conversion of metallurgical coal into metallurgical coke used in the manufacture of steel. At the 2015 OSIsoft Users Conference in San Francisco, Stephen Reynolds, Manager of Continuous Improvement for SunCoke Energy, described how the company has used the PI System to develop and implement fleet-wide operational intelligence, improve performance, and profitability.

SunCoke began using the PI System in 2009. Being able to convert coal into coke quickly and efficiently is central to the company's profitability. In his presentation, Reynolds described how the PI System supports SunCoke's business goals by allowing it to connect operational data to the company's revenue figures. "We were laying the foundation and finding our vision for what we want to do here," he said.

"At SunCoke, EBITDA is our primary measure," Reynolds said. Plant operations are the foundation of that metric: "how much does it cost to take a ton of coal and turn it into a ton of coke?" To find out, "you want to start at the bottom and get that grassroots information," he said, "and the PI System provides all of that operational data that we need".

SunCoke's seven coke production sites all use the same technology — but each site had its own way of measuring, recording, and reporting its operational performance. Implementing Asset Framework (AF) enabled SunCoke to develop a standard way of evaluating performance across sites. AF "makes sure that [the data] is always read the same way every time," he said.

One metric Reynolds described was yield. "If we improve yield by 1% across the fleet, that's roughly $17 million per year we can benefit from," he said. "We knew what yield was intuitively, but everyone had different puts and takes into that model. Business intelligence came in and standardized that." The model is now implemented in AF. "From 2012-2014," he continued, "we saw a 1% improvement in yield. We're already targeting an additional 1% here in 2015".

Tracking metrics "is really just scorekeeping," said Reynolds. "There is also money to be had in improved and optimized production. We have a push within our organization to bring our three newest plants up to their permanent maximum. This is roughly $9 million per year that we can capture, just from tonnage." Whether new or old, when plants are underperforming, they may not be able to hit their goal of cycling the ovens every 48 hours. A difference of just two hours can mean a potential loss of

$70,000 per oven. With 1,000 ovens in operation, "[there's] money to be had just from better operation, better troubleshooting."

To achieve those improvements, Reynolds said, "AF provides true operational intelligence. This is where the magic happens." Based on seven instrumented metrics per oven, SunCoke "created 17 analytic calculations to provide 30 more pieces of intelligence to that oven." Using the AF's calculations made that process "simpler because you are able to use the intermediate calculations each step of the way."
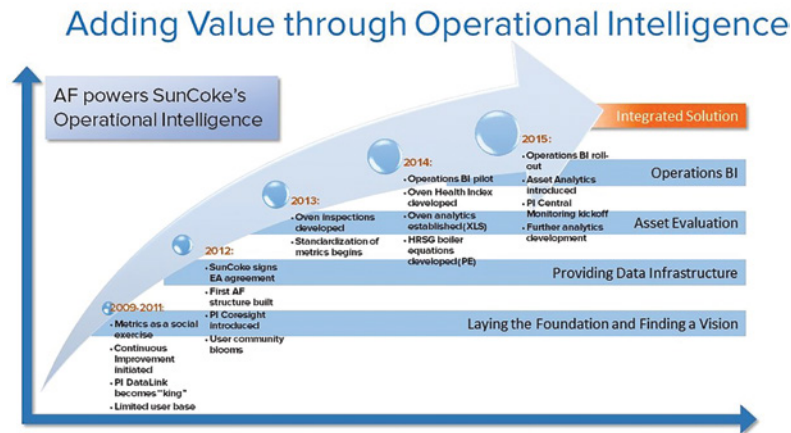
Some critical data flows are not automated. Keeping 1,000 ovens operating at peak performance means tracking 130 manually collected inspection points per oven. "We have two guys, and they travel around doing these all year long," Reynolds said. "The mound of paper is astronomical, and the information doesn't always flow quickly from inspector to the guys that can do something about it."

PI Manual Logger brings data in faster, easier and is already delivering benefits. "We are beginning to pair this with performance points, so we are able to map inspection and condition to oven performance to better prioritize our repair strategy." That's the best part of using the PI System, Reynolds said: "the continuous improvement: finding the problem, identifying a potential solution, and acting on it."

The next frontier for SunCoke is expanding its detailed monitoring approach to the energy generation part of its business. "We're going to continue rolling that out across the sites ... so there's a single point of truth," Reynolds said.

> **"The PI System provides all the operational data that we need and this improves our ability to troubleshoot, benchmark; the standardized analytics lets us translate from site to site so we're all speaking the same language."**
>
> – Stephen Reynolds,
>   Manager of Continuous
>   Improvement

[1] PI Coresight was renamed to PI Vision in 2017

Reynolds, Stephen. *SunCoke Energy: Achieving Enterprise-wide Operational Intelligence using the PI Server's Asset Framework.* OSIsoft.com. 29 April 2015. Web. 06 July 2015. <http://www.osisoft.com/Templates/item-abstract.aspx?id=12417>.